Library of the Royal Coll. Surge
England.
om the Author.

118

ADENOCELE

F THE MAMMARY GLAND.

By JOHN BIRKETT, F.R.C.S.,

ONE OF THE SURGEONS TO
GUY'S HOSPITAL,
&c.

FROM THE GUY'S HOSPITAL REPORTS,
THIRD SERIES, VOL I.

PRESENTED by the AUTHOR.

LONDON, 1855.

ADENOCELE.

By JOHN BIRKETT.

TUMOURS or new-growths developed in the mammary gland e composed of very different elements. All of them are fficult to diagnosticate, variable in their course, important in eir results, and the source of apprehension and alarm to the tient.

Any inquiry or examination which may add to our knowledge of their composition, or enable us to classify them ientifically, must therefore be productive of good results. stematic and accurately recorded facts of their natural story must assist the practitioner of surgery to diagnosticate em with greater exactness, to anticipate their progress, d to calm and allay those fears which are immediately oused in the mind of a woman who suffers with such a mplaint.

This communication is devoted to the record of several cases a class of new-growths, the natural history of which offers ny points of close resemblance, although the external forms d characters which these morbid growths assume vary in ost each individual instance.

The following are the principal facts to be illustrated :

1. The age at which these tumours are developed.
2. The social condition of patients in whose breasts they ow. Especially, in relation to the procreative organs.
3. As regards the necessity for operation or removal by the ife.
4. The prognosis.
5. The facts by which to diagnosticate these growths,

in the living person, from other tumours which are developed in the breast.

6. A classification of a large number of morbid growths which have long been recognised, and which have passed under very different names, but to all of which the term "Adenocele" seems applicable, since that expression implies a tumour composed of a structure in which the elements of gland-tissue may be demonstrated.

7. The recurrence of these growths, and the alternation of the varieties in one and the same individual.

The age of the patient at the time of the development of these new-growths is a highly important element in their diagnostication, and in every instance it should be accurately ascertained at what age the tumour was first observed.

I have notes of 62 of these tumours, all of which have passed under my own immediate observation, either before or after their removal from the patients: 46 of these were developed at various ages between twelve years and thirty; 16 between thirty years and fifty. Or, as the following periods of ten years demonstrate:

1st decade	1 to 10	no case	
2d „	10 — 20	cases 17	=46
3d „	20 — 30	„ 29	
4th „	30 — 40	„ 7	=16
5th „	40 — 50	„ 9	
Total . . .		62 cases.	

Adenocele seems to be developed at those ages when the procreative functions may be assumed to be in their most active condition; for in 62 examples, exactly half, namely 31, were developed before the age of twenty-four years. Thus, if the period of life from birth to forty-eight years be divided into three periods of sixteen years,—the first, from birth to sixteen, which may be termed the developmental period; the second, from sixteen to thirty-two, the period of developmental perfection of the gland; and the third, from thirty-two to forty-eight, the period of functional decline, I can show, that in the 62 cases, 5 occurred in the first period, 41 occurred in the second period, and 16 in the third.[1] Or, as the table demonstrates more clearly:

From birth to 16 years old	5 cases.
16 — 32 ,,	41 ,,
32 — 48 ,,	16 ,,
Total	62 cases.

In the estimation of the value of the facts bearing upon the social condition of the patients who have fallen under my observation some doubt might arise, but I have been very careful to ascertain whether the growths were developed before or after marriage.

The 62 cases afford the following data:

Single, when the tumour was first observed	45
Married, at the time the tumour was first observed	17
Total	62 cases.

Of the married women, there were

Prolific	11
Sterile	5
Not stated	1
Total	17 cases.

Of these 11 prolific women, it is interesting to inquire when the tumour was developed. Whether during pregnancy, when the mammary gland undergoes important changes, or after the cessation of the functions of the ovaries? And we find that in six cases the tumours were developed after the cessation of child-bearing; and in some cases a considerable period had passed since the last birth.

In one case, the tumour was developed three months after a second parturition.

---

[1] I have constructed a similar table from the work of M. Velpeau ('Traité des Maladies du Sein,' Paris, 1854), which I subjoin—

From birth to 16 years old	1 case.
16 — 32 ,,	18 ,,
32 — 48 ,,	19 ,,
Total	38 cases.

From this, it appears that, in his practice, a much greater number of cases occurred during the third period. I will not attempt any explanation of the discrepancy between the tables, but hope that other surgeons will, before long, give to the profession the results of their experience.

In the remaining four, the growth first appeared during pregnancy, that is to say, in one case, during the first pregnancy; in a second, during the second pregnancy; in a third, during the fourth pregnancy; in a fourth, during the sixth pregnancy.

The facts derived from the observation of all these cases, appear to afford conclusive evidence, that the development of these new-growths is intimately associated with the development or functional activity of the mammary gland itself. Should, however, this be the case, it seems difficult to understand why, in so large a proportion of cases, one breast only is the seat of a new-growth.

In 59 examples, only three patients had tumours developed in both the breasts. Of the remaining 56 cases, they occurred exactly in equal proportions, that is, there were 28 women with a tumour in the right breast, and the same number with one in the left.

The necessity for removal by the knife can scarcely be insisted on, unless the tumour be large, and its increase progressive. I have now observed several cases in which the patient would not submit to any operation, and the tumours have not enlarged, or their growth has been so slow as to cause no inconvenience. I have no hesitation in writing, that I have never seen any advantage arise from external applications. Lotions and ointments composed of several ingredients have been employed over the surface of the tumours, in the cases recorded, as well as in others, without producing the smallest diminution in their volume. On the contrary, I am persuaded that the continued application of different medicaments has, in some cases, rather accelerated their growth.

The prognosis of adenocele is always favorable; but some caution is necessary, lest they be confounded with some new-growths which are not genuine carcinoma, and yet whose natural history resembles this disease in some particulars, especially its recurrence. To these new-growths I shall, on some future occasion, call the attention of my professional brethren.

To diagnosticate the nature of any new-growth in the breast with accuracy, the surgeon must first of all satisfy himself that a new-growth really exists. And this does not seem to be always of easy accomplishment. Some of the morbid conditions to which the gland-tissue itself is subject, especially when much induration exists, are very liable to mislead; but by attention to the following manipular examination, all danger of committing an error of this kind may be avoided. If a patient be sitting or standing, and the breast is grasped by the finger and thumb, when induration of the gland itself exists, a sensation is felt as if a tumour were present. If now the palmar surface of the fingers be pressed flatly against the chest on the same part, nothing remarkable is distinguishable. If a tumour or new-growth exists, however, it is immediately perceptible. But if any doubt arise in the matter, the patient should recline when under examination, and then, if there be a tumour, it is immediately manifest to the touch, and often to the eye.

An inquiry should next be instituted into the condition of the mammary gland itself, particularly as regards its functional activity, for I have seen a case treated as one of hypertrophy of the mammæ, when the enlargement was due to pregnancy. And by this inquiry we are at once enabled to disconnect the present disease with those conditions dependent upon this functional activity of the organ, or, if the case demand it, to associate it with them.

If the disease under observation be really a tumour and the mammary gland in a state of inactivity, we have next to decide upon the nature of the growth. To decide, in fact, whether the growth be adenocele or carcinoma, or of some other nature. We shall be assisted by the personal history of the patient, as well as by our own manipular and visual examinations.

If the patient was under thirty years of age when the tumour was first observed, if she be single, and in good health, if the umour rolls under manipulation, and is difficult to fix for xamination, if this proceeding gives pain, causes some excitement and flushing of the cheeks, and if the pain continue, the urgeon may be tolerably certain that the small hard tumour an adenocele.

Should it happen that the case is not seen until the tumour very large, great care must then be taken to isolate the new-growth from the breast itself, and when this is carefully accomplished, the integuments will glide freely over its surface, which may be seen to be divided in lobes, and distinct from those of the normal gland. Large veins may traverse the breast, but although large, they lie freely under the skin, and not in furrows, as is often the case when cancer has infiltrated the integuments.

The whole breast is pendulous, the skin stretched, its follicles very distinct, the areola expanded, and the nipple small and flattened, but never retracted.

The integuments are healthy, their pink tint sometimes a little enhanced, and the lymphatic system of the organ wholly free from disease.

When cysts and solid growths exist, fluctuation is felt in some parts, and firm hard masses in others.

DESCRIPTION OF THE VARIETIES OF ADENOCELE.

In what particulars, especially as regards their structure, do these tumours developed in the breast, and known by the term "Adenocele," differ from, or closely resemble, the tissues and composition of the normal mammary gland itself?

The examination of a very large number of these growths enables us to reply to this inquiry with a very much nearer approach to accuracy than could have been hitherto accomplished.

The reader must call to mind the anatomy of the mammary gland, its lobes, lobules, cæcal terminations of the ducts lined with epithelium, and the ducts themselves. All these are closely united together by connective tissue, areolar or fibro-cellular.

Similar structures are recognisable in the new-growths known by the terms "Cysto-sarcoma," "Proliferous cysts," "Chronic mammary tumour," "Mammary glandular tumour," and to which I apply the name "Adenocele."

In them we discover lobes, lobules, the cæcal terminations of the ducts with epithelium, and even, as I shall presently describe, ducts in various stages of development, and indeed within these, or extravasated in the growths, a secretion having all the physical properties of the cream of milk.

In order to trace the resemblance between these tumours composed of cysts containing intra-cystic growths and the mammary gland, the reader must refer to Plate IV, fig. 2, of the illustrations of Sir Astley Cooper's work 'On the Anatomy of the Breast.' He will there see delineated, "A view of the gland, dissected and unravelled, to show the ducts over bristles, the lobuli and the glandules." The preparation itself, however, which is in the Museum of the College of Surgeons, shows even still better than the drawing, a striking resemblance to some of the intra-cystic growths of the tumours called "Cysto-sarcoma."

So striking is the resemblance between this drawing representing an unravelled gland and a cysto-sarcoma, that a delineation of one of these growths in the Guy's Hospital Reports, Second Series, vol. VI, Plate IV, fig. 1, might be regarded as the representation of such a dissected preparation, rather than a morbid production. Here the want of connective tissue permits the lobules of the growth to hang loosely from their envelope, just as "the lobuli and the glandules" are represented in the lithograph of Sir Astley Cooper's dissection, when the interlobular connective tissue has been removed by artificial means, and the gland-tissue thus unravelled.

The series of preparations in the Museum of Guy's Hospital, together with the illustrative drawings by Mr. Hurst, and representations of the minute anatomy of these growths which I have in my own possession, enable me to offer a systematic arrangement of these very interesting new-growths to the consideration of my professional brethren. At first sight, the annexed table may appear rather complicated, for it must be very difficult to appreciate its subdivisions unless a somewhat familiar acquaintance with these tumours has been acquired by previous examination. The truthfulness of the facts, however, is established by a reference to the preparations and drawings in the museum.

Adenocele in the mammary gland exhibits itself under three very different forms and aspects. Hence we have established, I think, by nature, three very marked divisions of these growths.

DIVISION I.—New growths which are compact, dense, firm, fibrous, lobed on their surface and in their interior, and enveloped in their own fibrous capsule.

Division II.—Cystoid formations having growths within them, which appear to spring from their walls. These growths being loose, pedunculated, and floating or sessile, and with no connective tissue between them; its place being often supplied by fluid.

Division III.—Cystoid formations distinctly referable to the dilatation of a duct, or to a connection with one, and containing growths which appear to spring from their walls.

In the first division, the morbid anatomist will see that I include those tumours termed, by Sir A. Cooper, "Chronic mammary tumour;" by Cruveilhier, "Corps fibreux;" by Lebert, "Hypertrophie partielle;" by Velpeau, "Tumeur Adenoide;" by Paget, "Mammary glandular tumour."

In the second division, I include the tumour described, by Sir A. Cooper, "Hydatid disease of the breast;" by Müller, as "Cysto-sarcoma;" by Sir Charles Bell, "Carcinoma mammæ hydatides;" by Sir Benj. Brodie, "Sero-cystic tumours;" by Paget, "Proliferous cysts."

In the third division, the variety described, by Sir B. Brodie, as arising "by a dilatation of portions of some of the lactiferous tubes." 'Lectures illustrative of various subjects in Pathology and Surgery,' p. 148.

The following varieties of the 1st Division are readily distinguishable.

A. With ducts or sinuses, and secretion.

B. With a trace of ducts in progress of development.

C. Not succulent, closely resembling gland-tissue, fibrous, but possessing only the cæcal terminations of the ducts.

D. The whole tumour very succulent, yet containing the cæcal terminations of the ducts united together by very delicate fibre-tissue.

E. Firm, dense growths, with larger or smaller *fissures*, but no cysts.

I shall now illustrate these varieties by the relation of cases, and by giving references to the preparations and drawings in the Museum of Guy's Hospital.

Div. I. *Var.* a.—*Adenocele, with ducts and secretion.*

Case I.—E. A. K., a healthy married woman, when twenty-one years of age, and a few weeks after marriage, discovered a small lump in her left breast. It was situated in the axillary region of the organ, and she is quite sure it never entirely dispersed. I saw her for the first time in January, 1852. She gave birth to her first child in January, 1851, which she suckled, and mostly with the affected breast, until October, when the infant died. At the time I saw her, she was pregnant with her second child, and the condition of the left breast was as follows: It was very heavy, solid, and I thought I could detect fluctuation. It was about double the size of the right breast, and the enlargement seemed chiefly in the axillary region of the organ. The external appearance was simply that of inordinate size and fulness, globular, and projecting from the thorax. The nipple was displaced considerably, and although never well developed, took a direction forwards, inwards towards the middle line of the body, and upwards. Scarcely any pain was ever experienced in the part, but only an uncomfortable sensation of weight. Doubtless, the fact of her being in advanced pregnancy gave rise to considerable difficulty in arriving at an accurate diagnostication of the disease, for it was not until after parturition, in April, 1852, that a new-growth could be distinctly felt. The second child she suckled some months. A third was born in December, 1853. This she suckled one month, and then it died. Whilst suckling the second infant, milk abscesses formed consecutively in the left breast, which obliged her during the later months of lactation to suckle with the right gland only. For several months previous to the operation for the removal of the tumour, its nature was very clear. During the later months of suckling, and after weaning, the normal gland being relaxed and flaccid, the firm, solid new-growth could be grasped by the hand, and isolated from the breast. At the same time the skin rolled freely over the tumour, and the lobulated surface of the growth was distinctly traceable beneath it. A very large vein was also seen traversing the surface of the tumour, and during lactation, the dimensions of this vein were enormous. It took a course towards the axilla, where it was lost.

On the 28th of February, 1854, I removed the tumour by merely dividing the skin over it; the mass being only very loosely connected with the gland, not a lobe of the true breast was cut, but it was left entirely in its normal situation after the tumour which displaced it was detached. It weighed three pounds. Very little hæmorrhage followed the incisions; the edges were adjusted by means of plaster, and the wound healed in about a month.

The tumour was composed of lobes loosely connected together. Each lobe could be separated into lobules; these again into the glandules or acini, which contained the cæcal terminations of the ducts. From these the smaller ducts united to form larger, and they traversed in some places the interlobular spaces. The free ends of some of these ducts terminated loosely on the surface of a cyst, which contained a large collection of a soft solid material, resembling thick cream. An analysis of this compound, made by Dr. Odling, afforded the following results—

Fat	85·31
Water	11·43
Albuminous matter, casein?	1·63
Animal extractive	·21
Inorganic matter	·58

Besides this large collection of cream in a rather thin-walled cyst, there was another not far distant from it of smaller size, filled with an almost cretaceous material. The wall of this cyst was firm and rigid, or like a piece of thick parchment.

Drawings [402[5, 6, 7]], preparations [2299[40]], illustrate this tumour, which is a very fine example of the first variety of the first division.

Plate I is a lithograph from a coloured drawing, made by Mr. Hurst, representing the section of the tumour.

Case II.—The only case, except the last described, in which I have found ducts containing milk, was shown to me by Mr. Nathaniel Ward, who removed it from a patient in the London Hospital. The following are the particulars of the case—

E. D—, an unmarried and healthy girl, when twenty years old, discovered a lump in her left breast, about three years and half before she showed it to Mr. Ward. The catamenia did ot appear until she was nineteen years old; they then ceased or nearly a year, and when they again reappeared, the general nlargement of the breast commenced. For a few months beore the removal of the tumour, a well defined and lobed mass onnected with the gland was perceptible. It was situated ehind those lobes of the gland which form its sterno-lavicular quarter; but with care the normal gland-tissue ould be distinctly detected, independently of the tumour. he lobes of the tumour were clearly visible beneath the kin, and a large vein traversed its surface. It was removed n May, 1855, by Mr. Ward, without any of the breast; nd that gentleman sent me a section of the new-growth. t was one of the firmest, most dense, and closely acked, small-lobed tumours, which I have examined. It had n extremely irregular external surface, and between the lobes r in the interlobular spaces, which were united together by oose filamentous tissue, were some large veins. These could e traced into furrows between the irregularities on the surface f the tumour. Ducts were also distinctly seen taking a course lirectly transverse to the large veins, and apparently disposed ıpon the surface of the lobes and between them, without any ery definite arrangement. Many of these ducts contained ecretion exactly resembling cream.

The follicular terminations of the ducts were very perfectly leveloped, and were very minute, although not so small as hose of the normal gland-tissue. No juice pervaded the mass, ut in some places this creamy secretion of the ducts was asily expressed from the cut surface.

The mammary glands, the nipple, and areola, were, in this nstance, remarkably characteristic of the virgin state. It is, herefore, a most singular fact that a new-growth should posess the function of a normal gland, although somewhat imperectly, especially when those organs which the new-growth losely resembled had never been stimulated to the performance f their own peculiar function.

The preparation is marked 2292^{35}.

We shall now take a comparative review of these two very nteresting cases.

Both the patients were very young women, in good health, when the tumours were first observed. One had been married, and was in the early months of pregnancy when she discovered the tumour. The other was an unmarried woman, and a virgin, when the development of the tumour began. In both cases, soon after the observation of the tumour, considerable difficulty arose in diagnosticating the disease; in the first case, on account of the general enlargement of the mammary gland coincident with pregnancy; in the second, because the development of the new growth was accompanied with general enlargement of the entire organ. Until this general enlargement of the organ had subsided, the tumour was not perceptible or distinguishable by touch or sight. When, however, in one case, lactation had produced a rather relaxed state of the breast, and, in the other case, the general excitation of the organ had subsided, then, and not till then, the diagnostication of the disease was comparatively easy.

These remarks are introduced in order to show the very great caution which should be exercised in pronouncing an opinion upon the nature of almost all diseases of the breast during any active or excited condition of the normal mammary gland. Surprise would perhaps scarcely be excited by the existence of the solid and fatty particles of milk in the case in which the function of lactation had been performed upon three separate occasions while the tumour was growing. But the other case demonstrates that even a virgin may have a tumour of this nature developed in the breast, and that the new-growth may so closely resemble the normal gland, and be so perfectly well-developed as to secrete the fatty and oily particles of common milk.

In both these cases the tumours were removed without cutting away the smallest piece of the normal mammary gland, a proceeding highly important in a practical point of view, for, in all cases of a like kind, the breast itself should be carefully sought for and preserved. This important practical fact is alluded to by Sir Benjamin Brodie.[1]

---

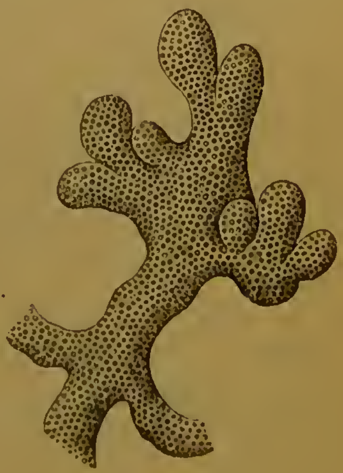
[1] 'Lectures illustrative of various subjects in Pathology and Surgery,' p. 280, &c.

Div. I. *Var.* B.—*Adenocele, with traces of ducts in progress of development.*

Case III.—The first tumour in which I ever detected ducts in progress of development, was given to me in 1849 by my friend Mr. Curling, who had removed it from the breast of a girl fifteen years old. She was a healthy country girl, and the catamenia were established and regular. About a year before Mr. Curling removed the tumour, the growth had appeared. It was situated among the clavicular lobes of the gland, was of oval shape, firm, and about two inches diameter. The tumour only was removed, and the wound soon healed.

The new-growth was not enclosed in a very well defined fibrous envelope, but there were small lobes of fat around it. It was firm and resisting when compressed. The external surface was nodulated. A section exhibited a very succulent surface, not smooth, but divided into lobes and lobules. The tissue yielded readily to pressure with the finger, for it was easily lacerated. Its vascularity was trifling. The materials of which it was composed coagulated quickly when immersed in alcohol or acid. A fluid which contained nucleated bodies and blood-discs could be scraped from the cut surface. The cæcal terminations of gland-tissue were perceptible when a portion of the growth was magnified and observed by transmitted light. In some parts of the growth I detected structures, which had all the appearances of ducts in the progress of development. Nucleated bodies, resembling he epithelium of gland-tissue, was so abundant. The connective fibro-cellular tissue was plentiful, of the usual character, but very delicate. Preparation No. 2292^{25}.

The annexed figure represents the pearance exhibited by the ducts, d sprouting forth of their cæcal erminations. If the reader compares is with the figure in Müller's 'hysiology,' by Baly, vol. i, p. 446, representing the deve-



Cæcal termination of ducts.

lopment of the parotid gland in the embryo of the sheep, he cannot fail to be struck with the resemblance.

Case IV.—My friend Mr. Solly was kind enough to give me a portion of a tumour which he removed from a girl, a patient in St. Thomas's, and aged twenty-five years. She was healthy; the catamenia were regular and normal; the mammary glands were well developed; she was not married; and the tumour had been growing about two years. On the surface of the left breast and to the axillary border of the areola, about an inch from the nipple, the tumour was situated, and immediately beneath the skin. The lobed surface of the tumour was distinctly visible when the skin was stretched over its surface. The girl felt no pain in the part, nor any inconvenience.

The tumour only was excised, and the wound quickly healed. It was a solid, fibrous, lobed, and rather succulent mass, about two inches diameter, and when thin sections were examined under a magnifying glass, traces of ducts, in progress of development, were very distinctly seen. They were filled with epithelium. The cæcal terminations of the ducts were likewise easily made out, and they also contained epithelium. Preparation 2299^{65}.

Div. I. *Var.* c.—*Not succulent; closely resembling gland-tissue; fibrous, but possessing only the cæcal terminations of the ducts.*

Case V.—One of the most remarkable instances of this variety was removed by Mr. Stanley, and the preparation may be seen in the Pathological Museum of the Royal College of Surgeons, No. 208. I wish more especially to allude to this case, because in 'Guy's Hospital Reports,' 1841, vol. VI, p. 203, a portion of the history of this case is recorded by Dr. Ashwell, and a lithograph represents the appearance of the disease. Mr. Stanley removed a tumour, the weight of which was seven pounds, on July 16th, 1843, leaving the normal mammary gland unmolested. I have seen this patient several times since the operation. She has given birth to three children, and suckled them with that breast from which the tumour was removed. When I last saw her, which was seven years after the operation, she was in good health, and quite free from any disease. If the reader should refer to the description of this tumour in the 'Descriptive Catalogue of the Pathological Specimens,' in the Museum of the College, he will doubtless detect some discrepancies between it and my statement. I have, however, through the kindness of Mr. Stanley, and with the assistance of the patient herself, identified this tumour with the woman whose history is recorded by Dr. Ashwell. As regards lactation with the breast from which the tumour was removed, I saw her suckle her infant in December, 1850. When I saw her at this date, through the kindness of my friend Mr. Curling, I made the following note of the case: 'There is a contracted and somewhat corrugated cicatrix on the anterior border of the right axilla, whence the tumour was excised. This cicatrix is remarkably small when it is remembered how large a growth was removed. The cicatrix and surrounding integuments are very moveable. The right breast is quite normal; indeed, it now appears as if the tumour had been removed from the anterior region of the axilla." In this tumour the cæcal terminations of the ducts were distinctly visible. Drawing 401^{50}; cast 2789^{50}.

Case VI.—A young lady, in excellent health, when twenty-two years old discovered a lump in her right breast. It was very moveable, rolling beneath the skin, on the surface of the ternal lobes of the gland. I removed this growth in August, 1853. The wound healed by adhesion in seven days. The tumour, which was contained in a delicate envelope, and from which it was enucleated, exhibited several small lobes. It was close, firm, fibrous, and of uniform colour and surface. The cæcal terminations of the ducts were very distinctly seen, filled with epithelium.

Case VII.—A. B—, was sent to me, by Mr. Vallance, of Brixton, in November, 1852. She was a healthy-looking, single woman, and a domestic servant. When twenty-two years of age, six years before I saw her, she accidentally observed that her right breast was larger than the left. From this period it slowly continued to increase, giving little pain, but much inconvenience from its dimensions. It was most painful after the cessation of the catamenia. When I saw her this function was in a healthy state, but five years previously she had suffered from amenorrhœa for some months after taking cold. At the first visit I could not satisfy myself that the great size of the breast depended solely upon a new-growth, for the appearance of its uniform and general enlargement was in favour of hypertrophy. Upon the second visit, I made out a new-growth, which seemed to occupy the sterno-clavicular segment of the organ, and to be imbedded between the lobes of the gland. Whilst the patient was sitting or standing, it was very difficult to define the tumour, but in the reclining posture its outline could be distinctly defined, and its lobed surface might be detected gliding under the integuments. A vein of considerable size traversed the surface of the tumour.

In January, 1853, I removed the tumour only by merely dividing the integuments, and a layer of the breast, which was spread out over its anterior surface. Cicatrization was retarded by the formation of an abscess, but it was entirely healed in March. The tumour weighed one pound, and it was enclosed in a thin fascial envelope, from which it easily turned out. The entire mass of the new-growth was only slightly divided into lobes. A section displayed very distinct lobules of about a quarter of an inch diameter, firmly united together by connective tissue. The cæcal terminations of the ducts were distinctly visible under the microscope.

This patient suffered considerable pain in the part for some months, especially before the catamenial period, and at variable intervals. The breast itself remains rather pendulous, and is still larger than the left. This, I suppose, depends upon the relaxation and stretching to which the tissues had been exposed from the weight of the tumour. The patient was quite well two years and a half after the operation. See drawings 409^{3}, 402^{35}, and preparation 2293^{55}.

Case VIII.—For the opportunity of observing the following remarkable case I am indebted to Dr. Quain. An active, excitable, intelligent, and precocious girl, was brought by her mother to consult me, in May, 1855, on account of the size to which the mammary glands had grown. About May, 1852, when she was eleven years and nine months old, the left breast was observed to enlarge, and in twelve months afterwards the right. Both the mammæ, when I saw her, had become exceedingly pendulous, reaching to below the false ribs, and, from their weight, causing annoyance. When the patient was recumbent there was no difficulty in detecting in the left a new-growth developed between and behind the clavicular lobes of the organ. It was very moveable beneath the integuments, and its lobed surface was as distinctly seen as felt. At first the enlargement had been attended with pain, now there was not any. The catamenia had never appeared although the mammæ were large; and, in the hope that the establishment of this discharge might arrest their development, galvanism was, by medical advice, resorted to. The first catamenial period arrived in December, 1853, and the function had been continued ever since, with occasional intervals of irregularity. Her mother stated that in August, 1853, the left breast "inflamed," that it was very red, but not very painful, and that this state lasted three months. After this time it was that the left breast became pendulous. Both parties stated that the right had always been pendulous. For about two years most conflicting opinions were advanced regarding the nature of the complaint; and various measures were adopted to arrest the development of the breasts and diminish their size. For a year before I saw the patient little or nothing had been done to them, except the employment of a supporting and compressing bandage.

Having detected the growth in the left breast I suggested the propriety of its removal as a means to diminish the weight and size of the organ. I did not, however, see the patient again for some weeks, and during this interval Sir Benjamin Brodie was consulted. He concurred in the diagnosis I had given, as well as in the propriety of excising the tumour, and I performed the operation in July, 1855.

Assisted by Mr. Dickinson and Mr. Whaley, I made an incision through the integuments and a layer of the gland-tissue, which was spread out over the tumour. But I found that it was intimately adherent to the surrounding gland-structure, so much so that incisions were required to detach the parts, although the first incision had been carried quite into the substance of the tumour. I have never before seen such a firm union between the tissue of the mammary gland and a new-growth. It was, however, soon removed, and the only hemorrhage was from several small vessels. To some parts of the surface of the tumour thin portions of the normal gland-tissue were adherent.

The tumour itself was the most dense, firm, and unyielding texture I have ever removed. It consisted of three primary lobes, or masses, loosely united together by connective tissue; but in these there was no trace of lobules. The section was quite smooth, uniform in aspect, and throughout of a dead yellowish-white tint. Several small veins traversed the growth, and their trunks were lodged between the lobes. The cæcal terminations of ducts could be seen in the tumour by means of the microscope, but they were very small and sparingly distributed throughout it. The tissue which predominated, was the wavy, filamentous fibre. Epithelium-cells from the cæci floated about in masses. The portions of the mammary gland consisted of fibre-tissue, with here and there traces of cæci, but it had all the characteristics of inactive gland-tissue.

I might here, perhaps, be allowed to state, that of all the organs in the body, there is not one which, when examined by the microscope, exhibits so much variety to the observer as the mammary gland. In a perfectly quiescent or inactive condition, those structures in which secretion takes place, the cæcal terminations of the ducts, are scarcely recognizable. For some time before and after lactation they are very distinctly seen. During lactation, of course, they are in their most perfect state of development. See preparation of the above case, No. 2292^{40}.

These four cases agree, in every external particular, with those tumours described by Sir Astley Cooper under the term "chronic mammary." 'Illustrations of the Diseases of the Breast,' 4to, 1829, p. 51, and Plates VI, VII, and VIII.

I have given the detail of them, because their natural history offers many points at variance with each other, and because each one is typical of cases with which we often meet in practice. By far the largest proportion of cases of adenocele belong to this variety of Division I. I could multiply facts, by relating more than twenty cases which have fallen under my observation, and by referring to the preparations of these growths which abound in the pathological museums of the metropolis.

Sections of all these tumours resemble, more or less closely, the cut surface of a mammary gland, under different states of either functional activity or the opposite condition. This observation also applies to their minute anatomy. Thus, the growth in Cases V and VIII resembled a section of a mammary gland from a woman who had never suckled, or from one in whom this function had not been performed for some years. In Case VII the lobulated surface of the section of the tumour closely exhibits the appearance of a breast, which is in preparation for the performance of its function; for in this the cæcal terminations of the ducts are more perfectly developed, and more abundant. The Case VI is a still more perfectly developed secreting tissue, for in this the minute structure resembles that of an active gland, for the cæci (or really secreting structures) are as well and as numerously developed as in the breast of a suckling woman.

Div. I. *Var.* d.—*The whole tumour very succulent, yet containing the cæcal terminations of the ducts, united together by very delicate fibre-tissue.*

Case IX.—A lady consulted my colleague, Mr. Poland, in 1850, on account of a tumour which was developed in her right breast, just beneath the areola. She was twenty-eight years old when she first observed it, and at which time she was in the seventh month of pregnancy. It gave her no pain, and she suckled her infant with the affected breast. One year and six months after the discovery of the growth, Mr. Poland excised it, by merely dividing the skin. The wound healed without an untoward symptom. It was contained in a thin, delicate envelope. The section was very succulent, almost translucent; of a pale greenish-yellow tint; perfectly smooth and flat. Its texture was close, and to the unassisted eye it appeared to be composed of an almost gelatinous substance. The minute elements were delicate fibres connecting together the cæcal terminations of the ducts. Preparation 2293^{50}.

Case X—In March, 1853, a young lady consulted me concerning a small tumour which had existed in her right breast about six months. She was twenty years old, in excellent health, and was unable to assign any cause for the origin of the tumour which she discovered accidentally. It was seated on the surface of the gland, rolled freely beneath the skin, and manipulation was not painful. I suggested excision as the only means by which to free her from the inconvenience, and to this she readily assented. The growth was enucleated with the greatest facility. It was enclosed in a well-defined fibrous envelope, from which it turned out. It was very succulent, almost gelatinous, and the cohesion of its particles was easily destroyed. The elements were a fine fibre-tissue, rectilinear, and very little wavy filamentous tissue. Nucleated corpuscles, which seemed to be distributed throughout the general mass, and the cæcal terminations of the ducts exhibiting fibre-tissue, and a limitary membrane full of epithelium abounded. Capillary vessels ramifying through the structures were distinctly visible.

The wound healed slowly, but when I saw the patient some months after, she was quite well, and free from all local complaint.

Case XI.—Mr. Wood, of New Romney, consulted me upon the case of a young woman, who, for about thirteen months, had had a tumour growing in the left breast. She was, at the time of the discovery, twenty-one years old. I recommended its removal, and Mr. Wood performed the operation. The tumour was succulent, but of close texture; easily broken up on pressure; and it showed the cæcal terminations of the gland-tissue most beautifully. Preparation 2299^{55}.

Case XII.—In 1849, I assisted my lamented friend and colleague, Mr. Bransby Cooper, in the removal of a tumour from the breast of a lady, aged 46 years. She had given birth to six or seven children, the last having been born three or four years before the development of the tumour, which which had been growing one year and nine months. At the edge of the right breast there was an irregular, firm, and very moveable growth, which was not adherent to the skin or muscle, beneath. The tumour, together with a portion of the mammary gland, was removed. The wound soon healed. The new-growth was enclosed in a fibrous envelope. A section showed an albuminous, succulent tissue, lobed, and having small cavities filled with cholesterine. There was one large artery supplying the growth, which was not, however, very vascular. In this tumour the cæcal terminations of the gland-tissues were very distinct.

These four cases also represent and illustrate a large class of tumours, whose external characters closely resemble some forms of carcinoma, and which, when occurring at late periods of life, were once, doubtless, considered to be that disease. I think we are justified in believing that it was such tumours as these which were removed, when it was supposed that a permanent cure of cancer had been effected by the excision of the disease, or its destruction by escharotics.

Div. I. *Var.* E.—*Firm, dense growths, with larger or smaller fissures, but no cysts.*

The growths of this variety appear to occupy an intermediate or transitional position between those described under the letters C and D, and those of the second division. The fissures, which are not always at first distinctly seen, can be clearly demonstrated by stretching the cut surface, and they appear to depend upon the absence of connective tissue. These fissures are often seen, although sparingly, in the growths before described, but they frequently occur in such abundance that the section of the tumour exhibits a most remarkable appearance, on account of their presence only. The natural history of these tumours offers no marked difference from that already given of others, and therefore it would be trespassing upon the time of the reader unnecessarily, by relating cases. References to drawings and preparations, in illustration of the structural peculiarity of these tumours, are, however, subjoined. In these growths the cæcal terminations of the ducts are frequently most beautifully developed. Drawings, 'Diseases of the Breast,' Plate VIII. Preparation 2292^{20}.

The following varieties of the Second Division may be distinguished by a careful examination with the unassisted eye, especially if the section be placed under water, or, more accurately, with a magnifying lens or microscope.

A. New-growths, which are composed of large-lobed masses, attached by peduncles to a fibrous wall, but which lobes do not possess any interlobular connective tissue. These lobes, however, when examined minutely, are composed of lobules having connective tissue uniting them together, and these lobules are made up of the cæcal terminations of the ducts.

B. New-growths, composed of small lobulated bodies, attached by peduncles to membranous partitions or envelopes, but which are not united together by connective tissue. These small lobuli, when torn up with needles, exhibit the cæcal terminations of the ducts surrounded by connective tissue.

C. New-growths, which exhibit an extremely delicately divided, almost granular texture, and which show, under the microscope, without any dissection or preparation, the cæcal terminations of the ducts growing from the fibrous septa between them. These terminal cæci having no connective tissue uniting them together into lobuli.

Thus we have demonstrated that the varieties of the *second* division are referable, as regards their external appearance, to the absence of connective tissue; first, between the lobes, secondly, between the lobuli, and lastly, between the cæcal terminations of the ducts. An examination of the preparations at once establishes the truthfulness of these observations.

A very fine series of preparations in illustration of these growths of this second division will be found in the pathological museum of the Royal College of Surgeons, Series VI, section 5, vol. i, p. 72; and in the museum of St. George's Hospital. To the last-mentioned Sir B. Brodie refers, in his 'Lectures illustrative of various subjects in Pathology and Surgery,' 1846, Lecture VII.

We may now proceed to examine the growths included in the second division.

Div. II. *Var.* a.—*New growths, which are composed of large-lobed masses, attached by peduncles to a fibrous wall, but which lobes do not possess any interlobular connective tissue. These lobes, however, when examined minutely, are composed of lobules having connective tissue uniting them together, and these lobules are made up of the cæcal terminations of the ducts.*

Two of the finest examples of this disease which are in the museum of Guy's Hospital, have already been employed to illustrate a paper by myself, in the sixth volume of the new series of 'Guy's Hospital Reports,' 1849. Plates IV and V are lithographic delineations of these tumours. Preparations 2296^{50} and 2296^{20}. I have already in this paper drawn attention to Plate IV, as it presents a striking resemblance to the drawing of an unravelled breast given by Sir A. Cooper, in his work upon the anatomy of that organ.

There is another very fine example in preparation 2294, drawing 402^{75}, and the history of the case is printed in my work on the 'Diseases of the Breast,' 1850, p. 106, case xlii.

Case XIII.—Drawings 403$^{75, 76}$, and model 41, were made from a tumour removed by Mr. Hilton. The girl was in the hospital in October, 1849. She was born in Edinburgh, was single, and in good health, although of a delicate and strumous aspect. In her twelfth year she noticed that her right breast was larger than the left, and from this date the tumour had been growing. When removed, the tumour was of twelve years growth. Several points of fluctuation could be felt, especially where the surface was nodulated. The mass projected from the chest, and the nipple was flattened. The breast itself was entirely involved, and was not distinguishable. A section of the new-growth showed several large-lobed masses, together with several smaller masses. The larger could be subdivided, and all contained the cæcal terminations of the ducts readily visible by the aid of the microscope. In all these tumours the larger lobes were composed of lobuli, united together by connective tissue, and if the spaces between the lobes had been filled up with connective tissue instead of the serous fluid which they once contained, we should then have had a growth which would have been classed in the first division. In these lobes we find all the elements of a gland, lobules, and the cæcal terminations of the ducts, and the only tissue absent is one connecting the lobes together in a general and uniform mass. Is it not, then, to this want of a connecting medium between the lobes that the peculiarity in the external appearance of this new-growth is to be ascribed?

DIV. II. *Var.* B.—*New-growths, composed of small lobulated bodies, attached by peduncles to membranous partitions or envelopes, but which are not united together by connective tissue. These small lobuli, when torn up with needles, exhibit the cæcal terminations of the ducts surrounded by connective tissue.*

CASE XIV.—In my book on 'The Diseases of the Breast,' page 136, Case LVIII, and at Plate VI, a tumour of the breast is described and delineated, which is now in the museum of Guy's Hospital, No. 2298^5.

This growth, removed by Mr. Francis Toulmin from a patient aged twenty-six years, had been slowly increasing during eight months. It was enclosed in a firm fibrous envelope. When cut through its centre, it appeared as if it would fall to pieces, so small and delicate were the foliated growths composing it. The whole mass was soft, succulent, and easily torn; and here and there fissures rather than cysts abounded. When magnified, these foliated bodies exhibited a very irregular outline, and composing them the cæcal terminations of the ducts could be very clearly demonstrated.

CASE XV.—Through the kindness of my friend Mr. Kellock, I have the opportunity of recording the following case. A married and prolific woman, when forty-one years of age, and about eighteen months after the birth of her last child, accidentally observed that her left breast was larger than the right. This enlargement occurred soon after weaning. It was painless, and the other breast was flaccid and pendulous. The catamenia were regular and normal when the tumour first appeared, continued so for several months, but ceased altogether about two years before I removed it. She was in her usual good health, but she was thin, with a rather anxious countenance; and apparently her condition, as regards nutrition, was defective. She had suckled four children with the affected breast, none of them with the other, rather from some fanciful motive than on account of any defective organization. I first saw this patient in September, 1852. The whole left breast was moveable, hard, and *apparently* infiltrated with some organized material; it projected from the chest; the skin, although stretched, was healthy, and she felt darting, shooting sensations at irregular intervals. The nipple was not involved in the growth. It projected forwards, and was quite healthy. The lymphatic system of the breast was unaffected.

In May, 1853, there was no alteration in the condition of the tumour, with the exception of a slight diminution. She had used an ointment of iodide of potassium.

In August, 1853, she struck the breast, and in three weeks afterwards it was very much larger. The whole mass was of a stony, solid consistence, and the skin slightly reddened; still neither the integuments nor the neighbouring lymphatic glands were infiltrated.

About the middle of October, a slight irregularity appeared on the sternal border of the tumour, which was much larger, more painful, very hard, and projecting. On the 18th of this month I removed the whole mass, which had been growing five years. I did not remove the nipple, but merely excised the new growth, which measured about six inches in its longest diameter. The breast was spread out over the tumour, and was atrophied.

The tumour was solid, fibrous, and composed of much filamentous tissue. Parts of it were succulent, the fluid being tenacious and glary. Throughout the entire section were cavities enclosing pedunculated and broad based growths. These contained the cæcal terminations of the ducts. Preparation 2298^{10}. Drawings 403^{15}.

Case XVI.—I was consulted by a single lady, forty-three years of age, who for three months had observed a steadily increasing growth of her left breast. The tumour was painless, although inconvenient from its size. The patient enjoyed good health, but her constitutional nutrition was defective; the catamenia had ceased. The swelling was first observed among the axillary lobes of the gland, but when I saw it the entire organ seemed to be involved. The integuments were healthy, perhaps a little more red than usual, and the surface somewhat irregular. This nodulated surface had existed about six weeks. When passing the fingers, with a little pressure, over the skin, hard and soft places were very distinctly recognized. In the soft parts fluctuation was distinct, and when the fluid was displaced by strong pressure a solid growth was felt behind. A conviction at once arose in my mind that the disease must consist of cysts containing fluid, and intra-cystic growths, having more solid masses between them. The nipple was prominent, but its apex was directed inwards, downwards, and forwards. The lymphatic glands around were all healthy. I suggested the propriety of immediate removal, and in a few days I performed the operation. I made two incisions on either side of the areola, and removed the tumour, together with all the breast. Only two arteries required ligatures. Cicatrization, after the first three weeks, proceeded slowly.

The new-growth was developed within the fascia of the gland, but at its posterior surface; so that the gland itself was entirely pushed forwards and downwards towards the abdomen. The new-growth was composed of cavities, with fibrous walls containing yellow serum, and solid growths. These solid growths were composed of the cæcal terminations of the ducts, united together by connective tissue. In other parts of the tumour were masses which belong to Div. I, var. c. Preparation 2299^{50}. Drawing 404^{5}.

These three cases afford many points of interest, when contrasted with each other.

1. As regards the ages of the patients when the tumours were first observed.

The first twenty-five years old, the second forty-one, and the third forty-three. They were therefore developed in the last two cases at an unusual age.

2. Their social condition.

The first case was that of a single girl and a domestic servant; in the second, the patient was married, prolific, and in tolerable circumstances; the third was an unmarried lady.

3. In relation to the condition of the gland affected.

The tumour was developed, in the first case, in a mammary gland whose functions had never been performed, but at that age when the developmental perfection of the organ may be considered to be at its highest point. In the second case, the gland had been called upon to perform its functions on several occasions, and lactation had been successfully carried on, perhaps even beyond a judicious period. The last patient, when the tumour was developed, was at that time of life when the functions of the breast have generally ceased. How can we, then, assign the development of these growths to any particular period as regards the state of the breast itself, especially in relation to the three periods before considered at p. 132? It is, then, only by reference to a large number of these cases that we can demonstrate their greater frequency at the period of life there stated.

4. The rapidity and size of the growth in relation to time and the ages of the patients.

In the first case, a tumour of eight months' development weighed about four ounces; in the second, of five years' growth, the weight was about a pound; and in the third, which had only been discovered three months, the weight was more than a pound.

So we have demonstrated that the tumour in the oldest individual of the three was the most rapid in development.

5. The general health of the patients.

All of them enjoyed good health, nor had there been any observed deviation from this state. The catamenia were normal and regular in the first and second cases, but after its cessation in the second the tumour increased more rapidly. In the third case, the catamenia, always healthily performed, had ceased two months before the tumour was developed.

6th and lastly. The diagnostication of the tumours before the operation.

The first case I did not see; but the diagnostication of the growth would be easily formed from the youth of the patient, the healthy state of the breast, and the mobility of the tumour, assisted by the manipulation of its surface. In the second the diagnostication was attended with great difficulty, and it certainly was a very perplexing case; but the healthy state of the nipple and integuments, the absence of all infiltration of the lymphatic glands, the freedom from pain, the age of the disease, and the state of the patient's health induced me to conclude that the tumour was not cancer. The diagnostication of the third case was comparatively easy, for, setting aside the age of the patient, every indication afforded by sight, touch, and the history given by the patient, was in favour of a disease in which collections of fluid and solid masses were the principal component elements.

DIV. II. *Var.* C.—*New-growths which exhibit an extremely delicately divided, almost granular texture, and which show under the microscope, without any dissection or preparation, the cæcal terminations of the ducts growing from fibrous septa between them; these terminal cæci having no connective tissue uniting them together into lobuli.*

CASE XVII.—A few weeks since I removed a small tumour of this variety from the surface of the left breast of a somewhat delicate girl, twenty-four years old. It was about one inch in diameter; it had been growing four years, and at the catamenial period was very painful. The growth was enclosed in a fibrous capsule. A section through the centre showed a surface divided into loculi by fibrous septa; these loculi or cystoid spaces being occupied by somewhat loose tissue, which projected from the walls, and which were not united together by connective tissue. These showed the cæcal terminations very distinctly, filled with epithelium. Preparation 2299^{60}.

CASE XVIII.—In May, 1849, my friend, Mr. Henry Lee, gave me a small tumour which he had removed from an unmarried patient, thirty-five years old. It was the growth of eighteen months; it was occasionally painful, and was situated in the left mammary gland. This tumour, when cut, showed a surface more minutely divided than any I had ever seen. Small portions, when magnified, demonstrated the fact that these minute bodies were the cæcal terminations of gland-structure ununited by connective tissue, and therefore requiring no artificial means for their display. Preparation 2292[15].

Case XIX.—To Mr. Teale, of Leeds, who has most kindly sent me several tumours, I am indebted for this case. A single, delicate girl, discovered a tumour in her left breast, when eighteen years old. The growth had existed two years when Mr. Teale removed it in December, 1850. It was about three inches in diameter, enclosed in a very well defined fibrous envelope, and, until this was divided, and a section made through the centre of the mass, it appeared to be firm and fibrous. I never saw, however, the cut surface of a tumour which so closely resembled a portion of an unravelled mammary gland. It was entirely composed of lobules, and the cæcal terminations of ducts projecting from their attachments. The former required dissection to show their composition. The latter had merely to be magnified to demonstrate their nature. In this tumour the varieties B and C occurred together. Preparation 2293[30].

I have been careful, in the selection of cases to illustrate the varieties of this division, to describe those tumours which are almost entirely composed of disconnected lobes, lobules, and the cæcal terminations of the ducts. The morbid anatomist, however, will, in the generality of specimens, meet with a combination of these varieties in one and the same tumour from a single individual. The smaller tumours are generally the most decided in their characters, and the smaller masses of the larger growths equally exhibit their structural peculiarities. All the very large tumours generally show in different parts smaller portions which belong to one of the three varieties I have attempted to explain, I hope successfully.

I could supply a large number of cases in which very heavy tumours have been removed, but the reader may see many of them in the pathological museums of London. Our own museum contains one preparation, 2296[10], removed in 1827, by the late Mr. Field, of Rotherhithe, from a married woman who was twenty-nine years old when the tumour was first discovered. The patient had submitted to its growth for eleven years when

Mr. Field removed a mass, the weight of which was more than ten pounds. There is a short account of the case in the 'Lancet,' No. 234, p. 797.

DIVISION III.—*Cystoid formations dependent upon dilated ducts, and containing growths from their walls.*

In a lecture published by Sir B. Brodie,[1] he describes a case which was under Mr. Keate, in St. George's Hospital, and in which that surgeon punctured a cyst in the breast, and let out some serum of the same nature as a fluid which escaped, by pressure, at the nipple. The tumour was subsequently removed, and cysts and intra-cystic growths were discovered, and one of the cysts communicated with a lactiferous tube. Again, at page 145, a similar fact is recorded, and at page 148, Sir B. Brodie writes, "there is reason to believe that these cysts are formed by a dilatation of portions of some of the lactiferous tubes."

CASE XX.—I have seen but one example of this fact, and the case, with an illustrative woodcut, is published in the 'Lancet,' 1852, vol. ii, p. 217. The preparation in the museum, No. 2293^{35}, is the new-growth which I removed from the left breast of a girl who first observed it when she was only sixteen years old. The diagnostication of the tumour was very easily made; serous fluid escaped at the nipple when the tumour was pressed. When I removed the growth, it was about two years old, and it measured about three inches in its longest diameter.

The tumour and a very small portion of the mammary gland-tissue was removed. The tumour was intimately mixed up with the gland-tissue, and extended completely through the thickness of the breast to its posterior fascia. The pressure upon the tumour the moment before commencing the incision, caused some yellow, glary, tenacious fluid to exude from the nipple. The whole mass of the new-growth was composed of cysts containing fluid and intra-cystic growths. At that extremity of the tumour, in close proximity with the nipple, a large and dilated duct was observable. After the removal of a small quantity of adipose tissue, the tumour showed nothing but a congeries of cysts apparently attached to or developed from a lactiferous tube. The two most prominent were those felt beneath the skin before the operation. The smallest of these, which had been the closest to the nipple, proved to be a very thick-walled cyst, filled with a solid growth. I inserted a tube into the duct, and by using some force was enabled to inflate the whole number of cysts composing the mass; thus demonstrating the uninterrupted communication between them. The walls of the cysts were of various thickness; some resembled a piece of parchment, others, goldbeaters' skin. The intra-cystic fluid was of the colour of amber, clear, viscid, and tenacious. It contained microscopic nucleated cells. Some of the cysts appeared to be entirely filled with solid growths, exhibiting the crenated, foliated, characteristic appearance of the ordinary intra-cystic developments. Under the microscope, they exhibited all the characters of the intra-cystic growths of the "cysto-sarcomatous" developments.

---

[1] 'Lectures illustrative of various subjects in Pathology and Surgery,' 8vo, 1846, Lect. VII, p. 143.

Of the alternation of the so called "Chronic Mammary" tumour and the "Cysto-sarcoma" in the same individual, and at different periods of life.

Two instances have fallen under my observation in which recurrent adenoceles of the breast have presented very remarkable varieties in their structural arrangements; and these two cases seem to prove the close affinity between those growths known as the "cysto-sarcomata" and the "chronic mammary tumour" of the late Sir A. Cooper.

Case XXI.—A healthy, married but sterile woman, was first seen by me in June, 1851. She was forty-five years old, strong, and in good health, although lately she had felt weak, sinking, and had become rather thinner. The catamenia were not regular, and at times she had suffered with dysmenorrhœa. Four or five months before her application to me she discovered a lump in her right breast; it had been preceded by a pricking and shooting pain, and these sensations had attracted her attention to the part. When I saw the tumour it measured about 1½ inch square; it was seated on the surface of the gland, and rather towards its sternal border. It was very firm, moveable, lobed, and irregular on its surface, and it seemed quite detached from the tissues of the breast itself. The woman suffered great pain upon gentle manipulation, and even for some time afterwards. The nipple was unaffected, and the axillary lymphatic glands were quite healthy. She said her sister had died of a cancer in the face. Her general health at this time was a little deranged, her appetite bad, and she complained of weakness. Soothing applications were employed over the tumour, and, her general health being improved by the exhibition of medicines, the tumour was removed on the 16th December, 1851, by making a single vertical incision through the integuments. No part of the breast itself was removed. The new-growth was enclosed in a loosely-attached envelope; it consisted of three unequally proportioned lobes, and these of lobules, which were all associated together by loose connective tissue. Acini, in which the cæcal terminations of the ducts loaded with epithelium were enclosed, constituted the lobules.

The wound healed favorably, although the whole gland was extremely tender and swollen, soon after the operation. During the whole year 1852 the breast was usually painful at the catamenial periods, and there appeared to be considerable local excitement in the organ.

In November, 1853, a new-growth was discovered near the cicatrix; the whole breast was very painful; and in February, 1854, I removed this second growth, together with the cicatrix and a very little adherent gland-tissue. The dissection of this new-growth exposed several cysts of variable size, and which were filled with intra-cystic growths, minutely and finely divided into lobules; these were very loosely united together by connective fibre-tissue. In another part was a growth much more resembling in appearance the first growth that I removed; it was firm, lobulated, enveloped in a fibrous capsule, and entirely united into a solid mass by connective fibre-tissue. As in the first growth, so in these, the minute elements of gland-tissue were distinctly visible when magnified; and although the cæcal terminations of the ducts differed from those of the first growth in many particulars, yet they were well marked and characteristic.

The wound healed favorably, but during the summer months of 1854 she suffered great pain in the axillary half of the organ;

the whole became much swollen and indurated, and resembled the breast of a woman during the later months of pregnancy.

In October, 1854, I discovered a third growth, at some distance from the cicatrix, and among the axillary lobes of the gland. This increased rapidly, and was accompanied with general swelling and induration of the breast.

I removed the third growth in February, 1855. It was much larger than either of the others, was imbedded in the lobes of the breast, and was firm, dense, lobulated, and united together by connective fibre-tissue. In this growth the cæcal terminations of gland-tissue were distinctly seen. This preparation is in the Museum, No. 2299^{45}, and the drawing No. 402^{43}.

In July, 1855, the patient was well.

The principal facts of the case are as follow:

The patient, when the first growth was discovered, was forty-five years old;

The first growth was eleven months old when removed;

Between the removal of the first growth and the discovery of the second, one year and ten months elapsed;

The second growth was three months old when removed;

Between the removal of the second growth and the discovery of the third, eight months elapsed;

The third growth was four months old when removed.

All the growths, varying as they did in their external appearances, still exhibited, when carefully and minutely examined, those elements and structures which are found in the mammary gland itself, with the exception of ducts. All, therefore, come under the denomination "Adenocele."

The first and last were, however, of the same nature as the tumour termed by Sir A. Cooper "chronic mammary tumour." The second growth belongs to that class of growths described by many writers under the term "cysto-sarcoma."

Plate II, fig. 1, represents the second growth.

This case, therefore, clearly demonstrates, that in one and the same individual, at different times, the surgeon may meet with these new-growths alternating with each other.

This case likewise shows, that the second growth grew more rapidly than the first, and the third more rapidly than either of the other two; and also, that the interval of time between the development of the second and third growth was much shorter than that between the first and second. These facts, which certainly seem to be almost constant in the natural history of recurrent new-growths, have been adverted to by Mr. Paget, in his work on 'Surgical Pathology.'

The case which I shall next describe has been, from uncontrollable circumstances, at that time, very imperfectly related in my work on the 'Diseases of the Breast,' p. 155, Case LXVI. It affords another, and well-marked instance of the alternation of these growths.

Case XXII.—A married lady, sterile, of a nervous temperament, but in the enjoyment of good health, applied to Sir A. Cooper, on account of a tumour in her right breast. It was discovered accidentally, when about the size of a pigeon's egg, and when she was thirty-four years old. Sir A. Cooper saw it, fourteen months after its discovery, in the year 1840. The tumour was seated at the upper and inner side of the right nipple. In consultation with Messrs. Colles and Carmichael, of Dublin, it was pronounced by them to be constitutional cancer. Sir Astley Cooper removed the growth; and the specimen may be seen in the Pathological Museum of the Royal College of Surgeons of England, No. 172, red numbers. The identity of this preparation is established, by the fact, that the name of the lady, and her place of residence, may be seen written on a slip of paper, in the hand-writing of Sir Astley, and which is in the bottle. I had in vain endeavoured to find this preparation, until examining the series at the College a few months since, although I had been informed by Mr. Balderson, that it had been preserved. The description of the tumour I shall extract from the printed catalogue.

No. 172.—"Section of a breast, in which is a large oval tumour formed by a congeries of cysts filled by lobulated growths. The largest of the cysts is spherical, two inches in diameter, with thin tough walls. It is completely filled by a growth which now protrudes from it, as if liberated from the pressure of the walls by which it was enclosed, and which itself had distended. The surface of this growth is not, in any part displayed by the section, adherent to the interior of the cyst, though they are in close contact. Its texture is pale, nearly white, opaque, and apparently uniform, almost like coagulated albumen. It is composed of many lobes or portions variously shaped, but all closely packed together; so that, till they were artificially separated, the growth probably appeared solid, and nearly uniform. All the other cysts have the same character as this largest one: they are from half an inch to an inch in diameter, and are similarly filled by growths. Between them there intervenes a small quantity of tough dense tissue, by which they are united into one nearly solid mass, and which the injection of the blood-vessels shows to be more vascular than the encysted growths. The substance of the mammary gland in which the tumour is imbedded, and all the adjacent tissues, appear healthy. The other half of the specimen is preserved in No. 2768. From the museum of Sir A. P. Cooper."

From October, 1840, until March, 1848, this patient occasionally experienced slight pain in the cicatrix. In the early part of the year 1848, the pain became severe, the cicatrix changed colour, and the breast enlarged. By the direction of Sir B. Brodie, she took Liq. Potassæ in beer, and Extract. Conii. The swelling diminished, the pain was less, and she thought herself cured. In March she felt more pain, the breast rapidly increased, and in October, the late Mr. Key was consulted. He found a moveable tumour, regular on its surface, pulpy, and with every appearance of the "encysted fungoid disease." This disease increased rapidly, the skin exhibited every appearance of speedy ulceration, and it was removed in October, 1848; it weighed one pound and a quarter, was soft, elastic, succulent, and surrounded by fat. The portion of cutis removed, in which was the cicatrix of the former wound, was perfectly healthy. The exterior of the tumour was deeply and minutely lobed, and it was invested by fibro-cellular tissue. The surface of a transverse section had a pink tint. No opaque fluid was expressible; but only a glairy, albuminous, and tenacious juice. The whole mass was solid, and composed of minute lobuli of an eighth of an inch in diameter, united together by connective tissue. The lobed exterior did not penetrate the mass. The tissue, at first somewhat translucent, became quickly opaque after immersion in alcohol.

The fluid which was scraped off the section, exhibited under the microscope, oil-globules and nucleated elements of the form and constitution of those found in all similar growths. A thin section exhibited the cæcal terminations of the ducts, large, and distended with epithelium. There were no ducts present. An imperfectly developed connective tissue existed between the cæcal terminations of the ducts. This preparation is in the museum of Guy's Hospital, and is numbered 2293^{45}.

The wound healed quickly, and the lady suffered no inconvenience in the part until the commencement of 1853, when a third tumour was observed. Dr. Fleming, of Dublin, was now consulted, and through his kindness, I had the opportunity of examining a part of the tumour, which he removed in March, 1853. It was about two or three inches in diameter, and therefore not nearly so large as either of the two previously removed. The piece of the growth he sent me is in the museum of Guy's Hospital, No. 2293^{46}. It was not like the other tumours in its external configuration, although it most nearly resembled the second. Like both of them, however, it contained the cæcal terminations of the ducts with loosely developed connective tissue. The section showed a very remarkable appearance, difficult to describe, of small spaces or fissures into which minute lobuli projected freely, and with but one very slight and delicate point of attachment.

The important facts of this case, are as follows:

The first tumour was developed at thirty-four years of age.

This tumour when removed was fourteen months old.

Between the removal of the first growth and the discovery of the second, seven years and six months elapsed.

The second growth was seven months old when removed.

Between the removal of the second growth and the discovery of the third growth, four years and three months elapsed.

The third growth was one month old when removed.

In this case, the first growth was a remarkably fine specimen of "cysto-sarcoma," the "proliferous cyst" of Mr. Paget. The second, was an equally well-developed example of Sir A. Cooper's "chronic mammary tumour;" and the third, could be scarcely described under either of these terms, although it exhibited the same elementary structures when examined by the microscope, whilst it appeared to differ from them to the unassisted eye.

It may be observed, that the sequence of the varieties of these growths was not the same in these two cases. In the first case, the first growth was dense, close, and fibrous; in the second case, the first growth was composed of cysts and intra-cystic growths. In the first case, the growth was followed by one composed of cysts and intra-cystic growths; in the second case, by a dense, firm, fibrous mass. In the first case, the third growth was firm, dense, and fibrous, while in the second, it was cystoid, with intra-cystic growths.

In both these cases the growths were developed at an unusually late period of life, especially in the first.

Both patients, although they married when young and enjoying good health, were sterile.

In both, only one breast, and that the right, was the seat of the disease.

And, lastly, in both, the intervals of time between the recurrence of the growths was less, whilst the rapidity of growth was much greater in the last than in the first developments.

To conclude, it would be foreign to the object of this communication to enter into any detail of the literature of its subject matter; but I may here state, that two excellent monographs devoted to these tumours have lately appeared in Germany. One from the pen of the renowned professor of Vienna, Rokitansky, entitled 'Ueber die Pathologische Neubildung von Brustdrüsentextur und ihre Beziehung zum Cystosarcom,' 1853. The other, by Dr. Adolph Weber, 'Das Adenoïd der weiblichen Brust,' Giessen, 1854.

PLATE I

Represents the section of the tumour removed from the patient whose case is related, p. 139, Case I.

The general lobulated appearance is seen, and in parts the section resembles very closely the tissue of the mammary gland.

Letter *a*, points to a small portion examined through a lens of low magnifying power; and here the minute structure of the gland-tissue is distinct.

b, indicates a cyst, or fibrous walled cavity, with the ragged ends of milk-tubes projecting from its walls.

c, the large mass of cream which occupied the cyst, *b*, and which resembled cream cheese.

d, a smaller thick-walled cyst, containing cream, which had undergone a process of thickening or drying.

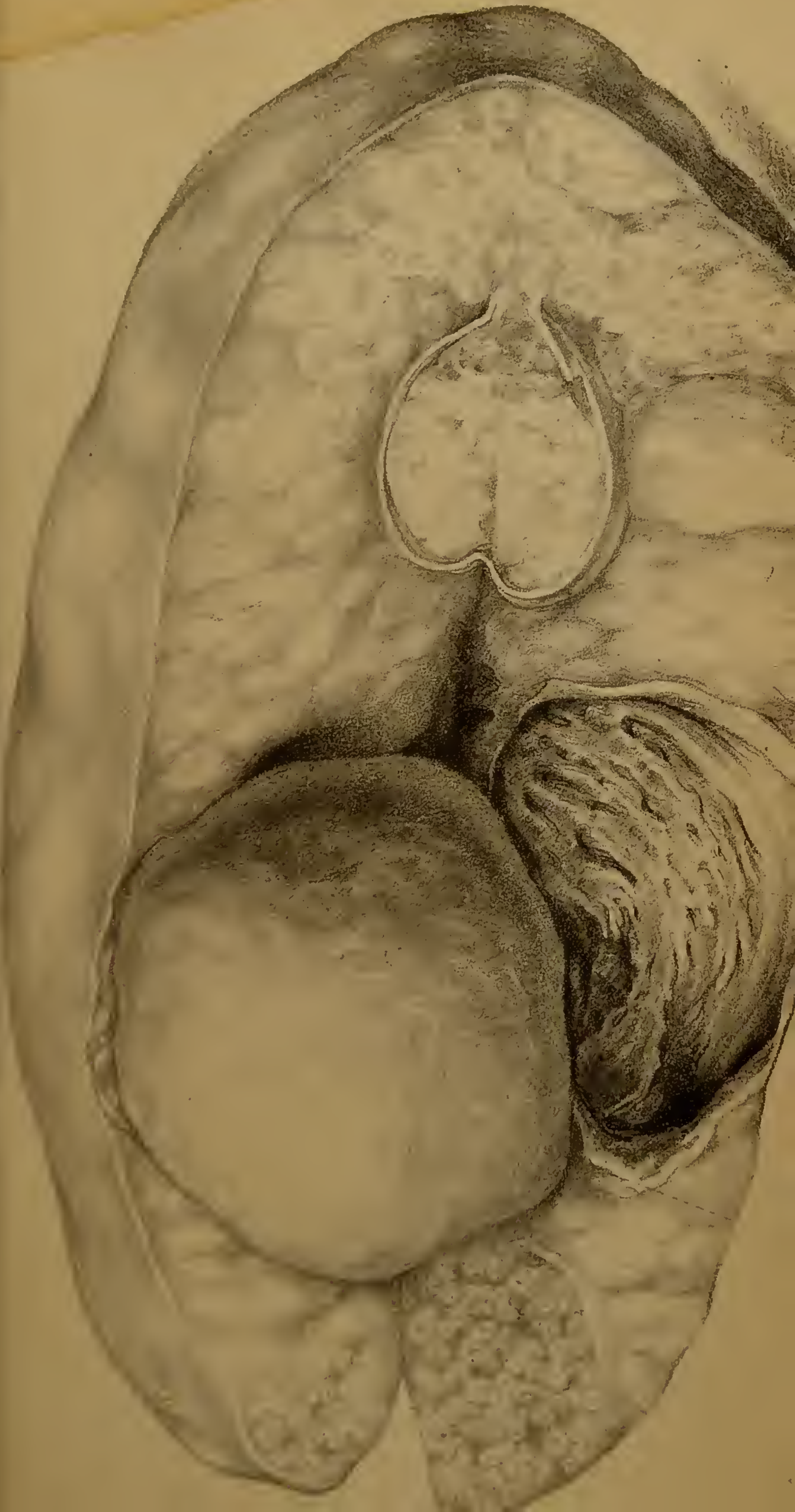


PLATE II.

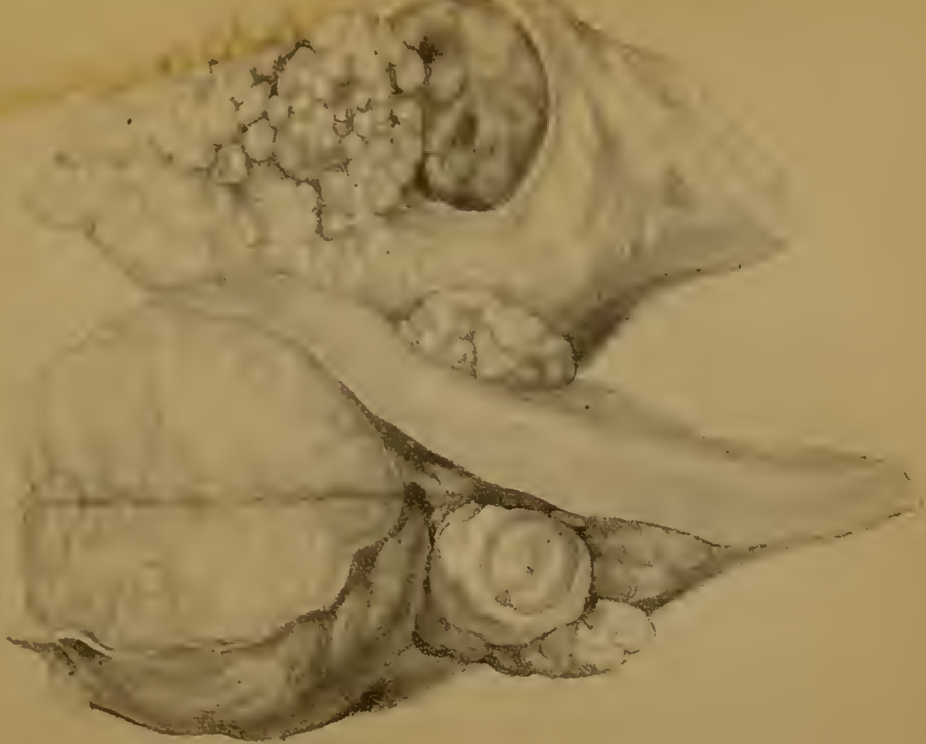
Fig. 1. Sections of the *second* growth removed from the patient whose case is related at page 161, Case XXI. The cysts and intra-cystic growths are seen, the latter hanging loosely attached to the walls of the former.

Fig. 2. One of the intra-cystic growths, magnified.

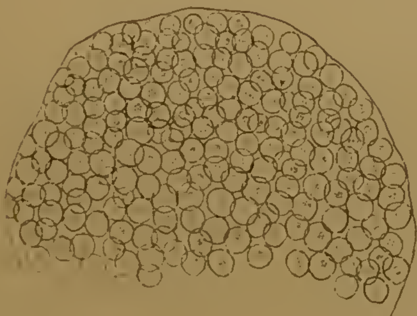
Fig. 3. Another portion of an intra-cystic growth, magnified, showing the cæcal terminations of the ducts containing epithelium. + 90 diameters.

Fig. 4. One cæcal termination, magnified, to show its minute elementary structure. + 270 diameters.

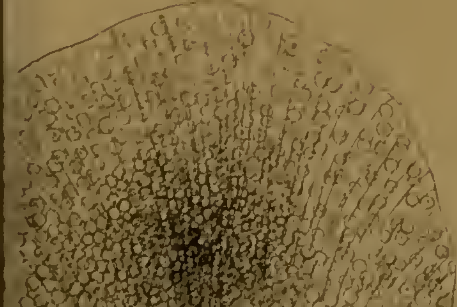
Figs. 5 and 6 are cæcal terminations of the ducts from other parts of the same growth. The last two figures are introduced to demonstrate that the elementary structures vary in size in different parts of the same growth; the epithelium, for example, is nearly double the size of that in fig. 4. Fig. 5, + 90 diameters; fig. 6, + 270 diameters.



6



2



5